

THE EMBODIMENTS OF THE INVENTION IN WHICH AN EXCLUSIVE PROPERTY OR PRIVILEGE IS CLAIMED ARE DEFINED AS FOLLOWS:

- 5 1. An apparatus for cleaning a vessel, the apparatus comprising an elongated flexible conduit insertable through an elongated rigid conduit into the vessel, for conducting pressurized liquid into the vessel to clean the vessel.
2. The apparatus of claim 1 further comprising a sealing device for sealing a gap between said flexible conduit and the rigid conduit to prevent fluid from travelling through the gap.
- 10 3. The apparatus of claim 1 further comprising the rigid conduit, wherein said rigid conduit comprises a rigid shroud extending into the vessel and having a shape complementary to that of the flexible conduit.
4. The apparatus of claim 3 wherein said shroud is insertable through an opening defined in a wall of the vessel.
- 15 5. The apparatus of claim 3 wherein said shroud is insertable through an elongated rigid valve assembly extending through a wall of the vessel.
6. The apparatus of claim 5 further comprising a sealing device for sealing a gap between said shroud and the valve assembly to prevent fluid from travelling through the gap.
- 20 7. The apparatus of claim 1 wherein said flexible conduit is capable of conducting the liquid at a pressure of at least 5,000 psi.
8. The apparatus of claim 1 wherein said flexible conduit is capable of conducting the liquid at a pressure of at least 10,000 psi.
9. The apparatus of claim 1 wherein said flexible conduit is sufficiently long to be  
25 inserted through the rigid conduit into a coker vessel.
10. The apparatus of claim 9 wherein said flexible conduit comprises a nozzle at a tip thereof.

11. The apparatus of claim 10 wherein said flexible conduit is sufficiently long for said nozzle to be inserted through the rigid conduit past an innermost opening of the rigid conduit within the coker vessel.
12. The apparatus of claim 11 wherein said flexible conduit is sufficiently long for said nozzle to be inserted into a snout of the coker vessel.
13. The apparatus of claim 11 wherein said flexible conduit is sufficiently long for said nozzle to be inserted through the snout into a gas tube of the coker vessel.
14. The apparatus of claim 13 wherein said flexible conduit is sufficiently long for said nozzle to be inserted through the gas tube into a cyclone region of the coker vessel.
15. The apparatus of claim 14 wherein said flexible conduit is sufficiently long for said nozzle to be inserted through the cyclone region into a vicinity of a dip leg of the coker vessel.
16. The apparatus of claim 1 wherein said elongated flexible conduit comprises coiled tubing.
17. The apparatus of claim 16 further comprising a reel for storing said coiled tubing in a coil on said reel.
18. The apparatus of claim 17 wherein said reel comprises a liquid junction connectable to an input end of said coiled tubing and connectable to a liquid supplying device for conducting the pressurized liquid from the liquid supplying device into said coiled tubing.
19. The apparatus of claim 18 wherein said liquid junction comprises a high-pressure fluid swivel connector.
20. The apparatus of claim 18 further comprising the liquid supplying device, wherein said liquid supplying device comprises a mechanical pump and a hose connectable to said pump and to said liquid junction.
21. The apparatus of claim 17 wherein said reel comprises at least one retaining member for retaining said coiled tubing on said reel.

22. The apparatus of claim 1 further comprising an insertion device for inserting said flexible conduit through the rigid conduit into the vessel.
23. The apparatus of claim 22 wherein said insertion device comprises an injector assembly operable to grip said flexible conduit and push said flexible conduit through the rigid conduit.
24. The apparatus of claim 23 wherein said injector assembly comprises first and second opposing traction belts operable to snugly grip said flexible conduit therebetween.
25. The apparatus of claim 24 wherein said injector assembly further comprises at least one drive mechanism for rotating said traction belts in opposite respective directions to move said flexible conduit through said injector assembly.
26. The apparatus of any one of claims 3 to 5 and 7 to 25 further comprising a sealing device for sealing a gap between said flexible conduit and the rigid conduit to prevent fluid from travelling through the gap.
27. The apparatus of claim 6 further comprising a second sealing device for sealing a second gap between said flexible conduit and the rigid conduit to prevent fluid from travelling through the second gap.
28. A method of cleaning a vessel, the method comprising:
- a) inserting an elongated flexible conduit through an elongated rigid conduit into the vessel; and
  - b) conducting pressurized liquid through the flexible conduit into the vessel to clean the vessel.
29. The method of claim 28 further comprising sealing a gap between the flexible conduit and the rigid conduit to prevent fluid from travelling through the gap.
30. The method of claim 28 wherein inserting comprises inserting the flexible conduit through a rigid shroud extending into the vessel and having a shape complementary to that of the flexible conduit.

31. The method of claim 30 further comprising inserting the shroud through an opening defined in a wall of the vessel.
32. The method of claim 31 wherein inserting the shroud comprises inserting the shroud through an elongated rigid valve assembly extending through the wall of the vessel.
- 5 33. The method of claim 32 further comprising sealing a gap between the shroud and the valve assembly to prevent fluid from travelling through the gap.
34. The method of claim 28 wherein conducting comprises conducting the liquid at a pressure of at least 5,000 psi.
- 10 35. The method of claim 28 wherein conducting comprises conducting the liquid at a pressure of at least 10,000 psi.
36. The method of claim 28 wherein inserting comprises inserting the flexible conduit through the rigid conduit into a coker vessel.
- 15 37. The method of claim 36 wherein inserting comprises inserting a nozzle at a tip of the flexible conduit through the rigid conduit past an innermost opening of the rigid conduit within the coker vessel.
38. The method of claim 37 wherein inserting further comprises inserting the nozzle into a snout of the coker vessel.
39. The method of claim 38 wherein inserting further comprises inserting the nozzle through the snout into a gas tube of the coker vessel.
- 20 40. The method of claim 39 wherein inserting further comprises inserting the nozzle through the gas tube into a cyclone region of the coker vessel.
41. The method of claim 40 wherein inserting the nozzle through the cyclone region into a vicinity of a dip leg of the coker vessel.
- 25 42. The method of any one of claims 30 to 41 further comprising sealing a gap between the flexible conduit and the rigid conduit to prevent fluid from travelling through the gap.